Grey Market for Indian IPOs: Investor Sentiment and After-market Performance

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Abstract

Extant research on developed markets shows that investor sentiment is a prominent feature in IPO grey markets. There is sparse work in the context of emerging markets. We fill this lacuna by studying the working of the Indian IPO market. We consider this work interesting and relevant for the following reasons. First, grey market trading always involves short-selling as securities are not yet available. Since legal and institutional environment is less developed in emerging markets, the functioning of grey markets is of interest to policy makers and financial economists. Second, retail investors participate to a greater extent in IPOs of emerging markets, ostensibly due to the relative paucity of institutional investors. Since prior research has shown that retail investors are more prone to overreaction, it is useful to examine if grey market prices proxy for investor sentiment. Finally, if grey markets are associated with price distortion in initial trading prices, then investors can potentially exploit this by using trading strategies. Our empirical results show that grey market prices are predictable and that these prices are associated with initial listing returns. Furthermore, selling at grey market prices and subsequent short-covering is shown to be profitable.

JEL Classification: G12, G14, and G32
Keywords: Grey Market, Initial Public Offerings, Investor Sentiment

1.0 Introduction

An investor in an IPO in emerging markets such as China, India, Malaysia, and Brazil would have earned huge returns on the listing day (China 165%, India 93%, Malaysia 70%, Korea 55%, Brazil 49%)[1]. The comparable listing day returns for developed countries is much lower (Germany 27%, Australia 20%, U.S. & U.K. about 17%, France 11%, Canada 7%). This raises the important issue as to what causes these huge differences in initial returns. A very rich literature based on developed markets has sought to justify underpricing using theories based on rationality such as information asymmetry. Loughran, Ritter, and Rydqvist (1994) based on their study of 25 markets provide the following three reasons to explain massive underpricing in emerging markets. Average initial returns tend to be higher (i) the greater is the level of government interference, (ii) the earlier in the offer process a fixing offering price is set, and (iii) the riskier are the firms going public. As countries have progressed in developing their capital markets, the validity of the first two reasons for the massive underpricing has vanished.[2] But emerging markets continue to experience very high initial returns even now. This fact flies in the face of theories grounded in investor rationality such as certification or information asymmetry.[3]

A major difference between the developed and emerging markets with respect to initial public offerings is the participation of retail investors. While institutional investors dominate IPO subscriptions in developed markets, retail investors dominate in emerging markets. Extant research is also of the view that retail investors are much more prone to

[1] Source from Jay Ritter's website: http://bear.cba.ufl.edu/ritter/IntJuly2009.pdf
[2] For instance, the use of book-building is now widely prevalent in both Indian and Chinese markets. See for instance Khurshed, Pande and Singh (2009) and Gao (2009).
[3] To explain the continued high initial returns on the basis of risk will require more than a heroic effort by financial economists.

sentiment than institutional investors. Thus a possible explanation for the high initial listing returns in emerging markets is the apparent "irrationality" of the sentiment-driven retail investors. We pursue this line of enquiry in the Indian IPO market. We are encouraged by three major features of the Indian IPO market that make this pursuit fruitful. First, retail investors are preferentially allocated more shares in an IPO than institutional investors. Second, pricing of IPOs is no longer controlled by governmental agencies with book-building as the preferred mechanism for pre-offer price discovery. Third, there exists an active grey market for trading Indian IPOs prior to their listing on the stock market. The grey market is not legally sanctioned, but continues to function and provide liquidity and price discovery services for new issues. The absence of a legal status precludes widespread institutional participation and is therefore a relatively cleaner setting for examining the role of sentiment-driven trading by retail investors in the new issues market.

We contribute to the literature in the following ways. First, our study examines the functioning of grey markets is the Indian IPO market. As such, this study breaks fresh ground, since we are not aware of any study in an emerging market context. Second, since prior research has shown that retail investors are more prone to overreaction, it is useful to examine if investor sentiment as proxied by grey market prices can explain listing returns. Finally, if grey markets are associated with predictable pattern in aftermarket stock prices, then investors can potentially earn abnormal profits by using trading strategies. Our empirical results indicate that grey market prices are predictable and that these prices are strongly positively associated with initial listing returns.

Furthermore, selling at grey market prices and subsequent short-covering produces abnormal profits for retail investors.

The rest of the paper is organized as follows. In the next section, we describe the institutional setting for Indian IPOs. In Section 3, we outline our data sources and sample selection procedures. Section 4 contains a brief overview of the related literature and our empirical results regarding determinants of grey market prices, their impact on initial listing and aftermarket performance. In section 5, we report results of investment strategies designed to exploit the predictable patterns in after-market returns as compared to grey market prices. The final section concludes.

2.0 Institutional Setting

2.1 Indian IPO Market

The oldest stock exchange in India is the Bombay Stock Exchange which was established in 1875 and lists 4,887 companies as of March 2008. The major competitor to the BSE is the National Stock Exchange (NSE) which lists 1381 companies as of March 2008. There are a number of regional stock exchanges as well. But these are practically defunct.

Historically, the Indian economy had been regulated with a heavy hand. This changed significantly in 1991 when the Indian government deregulated some segments of the economy in response to a serious balance-of-payments crisis. This was followed by deregulation of the capital markets in 1992. Until 1992, all aspects of capital issuance including the pricing of IPOs was controlled by a government agency called the Controller of Capital Issues (CCI). With deregulation, CCI was abolished and market forces were allowed to play a greater role in the capital issuance process. The

government created the Securities and Exchange Board of India (SEBI) to oversee regulations in the area of capital markets akin to the role of SEC in the US. A series of reforms was carried out in the primary and secondary markets. As a result, the amount of equity capital raised in Indian capital markets increased from INR 12 billion in 1990 to about INR 8543 billion as of 2008.[4]

The Disclosure and Investor Protection (DIP) Guidelines issued by SEBI constitute the basis for regulations governing primary market issuance in India. A major feature of this regulation was the abolition of pricing control that occurred in 1992. Companies with a track record were allowed free pricing of issues while new firms (with less than 12 months of operating history) were restricted to issuing equity at par value. Initially, IPOs in India were offered only via a fixed price mechanism. The regulators sanctioned the use of book-building for IPOs in September 1999.

While the regulatory changes have brought the issuance process similar to that of developed markets, there remain significant differences between the Indian system and those prevailing in the US and Europe. In order to understand the differences more clearly, we describe the IPO issuance process as it obtains now in the following subsection.

2.2 The Issuance Process

The first task of the firm conducting an IPO is to select its investment banker. In Indian parlance, the main investment banker is called as the Book Running Lead Manager (bookrunner). The bookrunner initially files a Draft Red Herring Prospectus (DRHP)

[4] All the statistics contained in this section are culled from the "Handbook of Statistics on the Indian Securities Market 2008" published by SEBI and accessed from their website.

with the regulator. This document contains all relevant information pertaining to the issue except the price. The bookrunner arrives at a tentative price based on the prospects of the issuing firm and market conditions. A report containing details of the issue including price is then circulated amongst its institutional client base and the bookrunner conducts the road show. Based on information collected at the road show, the bookrunner arrives at a price band which is similar to the filing range in US parlance. The bookrunner then files the Red Herring Prospectus (RHP), which contains the pricing band, with SEBI. The price band is the basis of the book building process.

The price band provides a minimum and maximum price – the range within which the final offer price will lie. The pricing band could be adjusted upward or downward based on demand. By regulation, the maximum price in the band cannot exceed 120% of the minimum price of the band. In the US difference between the minimum and maximum price in filing price range is almost always USD 2. Whereas in the US the filing range may be revised many times, in India the price band is almost never revised upwards and sometimes revised downwards in the face of low demand.

After filing the RHP, the bookrunner forms a syndicate of brokers/banks/financial service providers to perform the book building exercise. Regulators have categorized investors into three classes for the purpose of IPO allocation – Qualified Institutional Buyers (QIBs), Non-institutional Investors (NIIs) and retail investors. The QIBs are to be allocated no more than 50% of the offered shares. Each retail investor is allowed to invest a maximum of INR 100,000 and collectively retail investors should be allocated a minimum of 35% of the offered shares. NIIs are essentially high networth retail investors who invest more than INR 100,000 in an issue and are collectively allocated 15% of the

shares. Thus in every issue retail investors are guaranteed a minimum of 50% of the shares offered.

The book building period typically lasts for 5 days with a minimum of 3 days and a maximum of 10 days as ordained by the regulator. All classes of investors have to place their bids only through the syndicate. All bids may be modified during the book building period. The bids are electronically entered by the syndicate members and transmitted to the Bombay and National Stock Exchanges through a satellite network. The books are updated and disseminated at half-hourly intervals by BSE and NSE. The websites show for each category of investors, the number of shares applied for and the percentage of the issue that has been subscribed**.**

After the completion of the book-building period, the bookrunner in consultation with the managers of the issuing firm decide on the offer price. If the issue is oversubscribed for any category of investors, then pro-rata allocation is made by means of a lottery. It is the responsibility of the stock exchanges to ensure that the allocation is conducted in an impartial manner.

In addition to the regulations outlined in this section, issuing firms also need to get their offer of initial public offerings graded by one of the accredited credit rating agencies. We explain the relevant details of this requirement below.

2.3 IPO Grading

In March 2007 the Securities Exchange Board of India (SEBI), the securities market regulator in India, made it imperative for all initial public offerings (IPO) entering the

capital market to get a grading from one of the credit rating agencies[5]. The move has the objective of preventing fly-by-night operators from accessing the capital market. Mandatory IPO grading was to be effective from May 1, 2007.

IPO grade is the rating assigned by a Credit Rating Agency (CRA) registered with SEBI, to the IPO of equity shares or any other security which may be converted into or exchanged with equity shares at a later date. The grade represents a relative assessment of the fundamentals of that issue in relation to the other listed equity securities in India. Such grading is generally assigned on a five-point point scale with a higher score indicating stronger fundamentals and vice versa as below.

IPO grade **1**: Poor fundamentals
IPO grade **2**: Below-average fundamentals
IPO grade **3**: Average fundamentals
IPO grade **4**: Above-average fundamentals
IPO grade **5**: Strong fundamentals

IPO grading can be done either before filing the draft offer documents with SEBI or thereafter. However, the Prospectus/Red Herring Prospectus, as the case may be, must contain the grade/s given to the IPO by all CRAs approached by the company for grading such IPO. Interestingly, IPO grades were not assessed taking into account the price at which the IPO was to be issued.

Under the regulation, companies rather than investor-protection fund would bear the costs of the grading process. The cost of grading each issue is approximately INR 500,000 and takes around 3-4 weeks.

[5] There are four credit rating agencies in India: CRISIL, CARE, ICRA and Fitch. CRISIL is owned by Standard and Poor. Moody's is the largest shareholder in ICRA.

According to CRISIL, one of the top credit rating agencies in India, IPO grading represents an independent relative assessment of fundamentals of the equity based on the following:

a. Business Prospects. This comprises
   i. Industry prospects
   ii. Company prospects - the alignment between industry opportunities, the company's strategy and its capabilities.

b. Financial Prospects - This includes a rigorous assessment of accounting quality using advanced tools devised by CRISIL Research

c. Management quality - An assessment of the ability of the management to handle uncertainty in terms of capitalizing on future business opportunity and mitigating the impact of contingencies

d. Corporate governance - An evaluation of the company's governance architecture to determine if it is structured such that the risks and rewards of business are equally available to all shareholders in keeping with the basic tenets of a joint-stock company.

Typically the grading exercise begins when the firm enlists the services of a CRA. Analysts from the CRA hold meetings with the CEO, CFO, and heads of strategic business units. They also visit the firm's plants if required. The rationale for grade awarded is conveyed to the firm. This information is required to be disclosed in the prospectus.

2.4 Grey Market

Another interesting feature of the Indian IPO market is the existence of a Grey Market. Grey market is an unofficial market where IPO shares are bought and sold before they become officially available for trading on the stock exchange. It is an over-the-counter market where dealers may execute orders for preferred customers as well as provide support for a new issue before it is actually issued. Grey market trading include trading

(selling or buying) applications for a fee and trading (selling or buying) allocated shares of an IPO issue before they list on stock exchanges.

Grey market trading is not officially sanctioned and is therefore not legal. However, there exists an active grey market for IPOs in the Indian cities of Ahmedabad, Delhi, Jaipur, Kolkata, Mumbai, and Rajkot. Trading usually occurs between a set of people who trust each other as there is no official platform or clearly defined rules. Trades done in the grey market are settled on the day of listing. The seller must deliver the shares sold by her to the buyer. If the seller is allocated less number of shares than what she has sold, she has to buy from the market and deliver. Most of the issues sell at a premium to the offer price. However, it is not uncommon to see some issues selling at a discount to the offer price.

A thriving grey market exists because of divergent perceptions regarding a particular issue. While some investors see the issue as highly underpriced and are willing to pay a substantial premium, others may feel that the high premium is not justified. The grey market for a given issue becomes active once the firm announces its book building dates. The grey market price is determined in the market based on supply and demand and fluctuates over time. Information regarding grey market prices can be obtained from websites dedicated to IPOs such as chittorgarh.com, greymarket.in, and smartinvestment.in. Since grey market trading is illegal, official sources of grey market are not available from the stock exchanges or bookrunners. Grey market remains active until the stock is listed. Since it typically takes about three weeks from the closure of book to the commencement of trading on the stock exchange, grey market prices provide

an early indicator for the expected listing price of the issue. As such even investment bankers pay attention to the grey market price to predict possible listing price.

3.0 Data and Sample Selection

Our sample includes all Indian IPOs that were issued from May 1, 2007 to December 31, 2008. We obtained our data from five different sources. SDC Platinum New Issues data base was our source for basic issue characteristics. The website of the regulator was utilized as the source of issue prospectuses.[6] Bloomberg database was our source for stock prices and trading volume. We accessed the websites of the credit rating agencies to obtain the IPO grades. Finally, we collected the grey market premium (GMP) from various websites dedicated to IPOs such as chittorgarh.com, greymarket.in, and smartinvestment.in. Although grey markets operate from the time the book-building dates are announced, we only collect the last grey market price prior to the listing day. Our intent is to measure the retail investor sentiment prior to the listing of the stock on the exchange.

Our overall sample is composed of 75 issues which went public between May 2007 and December 2008. In Table 1, we show descriptive statistics regarding offer, firm and corporate governance characteristics of our entire sample and the two subsamples based on grey market premium. We characterize as an issue as one of low grey market premium (Low GMP) if the GMP on the day before listing was below or equal to the median for the sample. The rest of the sample is classified as issue with high GMP.

[6] We used the website of Security and Exchange Board of India (SEBI), http://www.sebi.gov.in/ for IPO prospectuses.

First, we note a number of significant differences between the low and high GMP subsamples with regard to offer characteristics. The average net proceeds of high GMP firms is significantly higher than that of low GMP firms. This finding implies that firms making larger issues enjoy higher grey market premiums. The offer price is also higher for high GMP firms as compared to low GMP firms. High GMP firms also enjoy higher listing returns on the opening day of trading. High GMP firms on average use more reputed underwriters as compared to low GMP firms. Second, we find a few significant differences between high and low GMP with respect to firm characteristics. High GMP firms on average have higher EPS as compared to low GMP firms. Furthermore the Net Asset Value per share is higher for high GMP firms as compared to low GMP firms. Although low GMP firms have a higher mean value of total assets than low GMP firms, the medians show the exact opposite pattern. A similar pattern is also observed for total liabilities. Thus we can conclude that large size firms which are more profitable and have more asset value per share enjoy higher grey market premiums. Third, there are just a few significant differences between high and low GMP firms with respect to corporate governance. High GMP firms tend to have busier managing directors and higher post-issue holdings of promoters as compared to low GMP firms.

4.0 IPO Pricing and Listing Returns in the Presence of a Grey Market

4.1 Related Literature

There exists a large literature that implies a significant presence of sentiment investors in the IPO market. For instance, Ritter (1991) finds that abnormally high prices at the listing of an IPO is followed by abnormally low returns in the long-run. Ritter and Welch

(2002) show that this reversal pattern is especially strong in hot market periods. Purnanandam and Swaminathan (2003) find that issues which are overpriced relative to their fundamental values experience high returns on the listing day but are followed by lower returns in the long run. An explanation for this finding is that underwriters set the offer price at a price higher than the fair value when investors exhibit excessive interest in a particular issue. Thus we observe a high return in the short-run and the price drifts down towards its fundamental value. Similar findings are reported by Ljungqvist, Nanda, and Singh (2006).

Using the grey market, some researchers measure the expectations of sentiment investors directly. Dorn (2003) reports that the volume of grey market trading among the customers of a German retail brokerage firm is correlated with high listing returns and low returns subsequently. Loffler, Panther, and Thiessen (2005) find that grey market prices are unbiased predictors of first-day prices. Aussenegg, Pichler, and Stomper (2006) report similar findings. Cornelli, Goldreich, and Ljungqvist (2006) using grey market data for a large number of European IPOs find an asymmetric relation between grey market prices and subsequent returns. When grey market prices are high subsequent returns are lower. This pattern does not occur when grey market prices are low. They attribute this finding to the enthusiasm of small investors who drive the prices high in the short-run in the aftermarket followed by a reversal as price converges to the fundamental value over the long-run.

In the case of the Indian market which is dominated by retail investors, we are likely to find the impact of sentiment investors on IPO returns. Furthermore, the long delay of about three-weeks between the completion of book building and stock market

listing provides an ample opportunity for sentiment investors to trade based on their excessive interest in a given issue. Furthermore, it also gives sophisticated investors an opportunity to exploit sentiment investors to make an abnormal profit. Thus it is possible that our findings reflect the findings reported in studies of other grey markets for IPOs. On the other hand, it is also possible that sentiment investors' overreaction could be corrected more rapidly in the cases of issues with high grey market prices. This is due to the large time delay between the completion of book-building and listing in the stock exchanges. We therefore, examine this empirically in the following subsection.

4.2 Determinants of Grey Market Premium

In this subsection we address the important issue of determinants of grey market premium. We measure grey market premium as the ratio of grey market price to offer price. The grey market price is the price over offer price that investors are willing to buy or sell in the unofficial market. We conduct OLS regressions using grey market premium as the dependent variable and firm characteristics, issue features and investor demand as independent variables. Our results are reported in Table 2. The main empirical fact that we document is that the level of oversubscription of the issue is a major determinant of the grey market premium. Univariate regression with the overall oversubscription variable shows adjusted R^2 of 65%. Issues with stronger investor demand apparently command higher prices in the grey market. When we separate the oversubscription in to three categories based on the type of investor: Retail, QIB (institutional) and non-institutional, we get similar results. The strongest coefficient is for retail oversubscription, while the highest R^2 is obtained with QIB oversubscription. Other

variables such as IPO Grade, Offer Price and Return on Net worth are highly statistically significant. The results indicate that investors price the issue based on the quality perception denoted by the grade issued by credit rating agencies. The results also imply that investors regard offer price as a quality proxy. We do not have an explanation for the negative impact of Return on Net worth on grey market premium. The basic result is that grey market premium which is a proxy for investor sentiment is predictable and is related to another variable that captures sentiment, namely, subscription.

4.3 Impact of Grey Market Prices on Aftermarket Returns and Volume

We report results of regressions of listing returns (Model 1) in Table 3. The results show that listing day returns are strongly positively related to GMP that is measured on the day prior to listing. This finding indicates that grey market prices provide early indications regarding listing day prices. As such our evidence is consistent with earlier work on grey market such as Loffler, Panther, and Theissen (2005) and Aussenegg, Pichler, and Stomper (2006). IPO grades are strongly negatively related to listing returns indicating that IPO grades act as a quality signal thereby reducing the underpricing. Offer price is also negatively related to underpricing suggesting that offer price acts as a quality proxy. The basic results are unaltered when we use days 2, 5, 10 and 20 closing prices to measure underpricing. As such, these results indicate that grey market prices possess strong information content regarding future stock price after listing. It appears that investor sentiment is captured in grey market prices that is then carried through in after-market prices.

Another aspect of investor sentiment is the associated trading volume. If grey market prices are indicative of heightened investor interest, then we should expect to see higher trading volume on listing for issues with high grey market premium. We report results using natural logarithm of trading volume as a dependent variable in a multivariate framework in Table 5. Univariate results show that GMP has a negative impact on trading volume. GMP is not significant when we use a set of independent variables such as Issue Size, Age etc. We find similar results when we use turnover as the dependent variable. The results clearly show that grey market activity does not have an impact on the trading activity on the listing day. While these results are surprising, they are not inexplicable. It appears that for issues with high investor interest trading takes place in the pre-listing grey market as impatient investors do not need to wait until stock market listing.

While we have shown that grey market prices have information content and are therefore indicative of listing prices, it is not clear if there exists investor overreaction. In order to examine investor overreaction, we examine after-market returns for various horizons up to 120 days from the listing day. The results are shown in Table 4. In Panel A, we show returns based on offer prices. We add time as a variable to capture the time trend in after-market returns. The main result of Panel A is that GMP is positive and statistically significant at the 1% level for all windows. Time trend is negative and statistically significant consistent with the international evidence that after-market returns for IPOs are predominantly negative. Underwriter reputation and analyst recommendation are always positive indicating that these are not fully priced in the offer price. IPO grades have a negative coefficient indicating that underwriters price them

higher ceteris paribus. Book built issues have higher after-market returns other things being equal. Issue with higher offer prices and higher issue sizes have lower returns. Firms with higher return on net worth and those with higher total assets earn higher returns. Overall, our results suggest that grey market prices have information content regarding future returns of the IPOs.

In panel B, we examine after-market returns based on the closing price on the listing day. GMP is positive and significant for up to 30 days. Beyond that period, its significance drops. The key finding is that GMP does not enter with a negative sign. Issues with a higher grey market price are not associated with a steeper correction in the after-market. As such our results are at variance with those reported by Cornelli, Goldreich, Ljungqvist (2006).

In order to understand our findings more clearly, we plot the mean and median grey market premium and underpricing (measured at the closing price on the listing day) and report the outcome in Figures 1 and 2. These figures clearly show that listing prices are lower than that implied by grey market prices. That is prices start correcting downwards starting from the listing day. We also notice sharper corrections for high GMP subsample as compared to the low GMP subsample. We examine further the magnitude of price corrections using grey market prices as the benchmark. A graphic portrayal of our results is contained in Figures 3 and 4. Starting from the listing day, after-market prices correct sharply from the grey market prices. From day 2 to 20, the corrections increase almost monotonically. Relative to grey market prices, the median correction is about 25% for high GMP firms and about 18% for low GMP firms.

In order to understand this phenomenon further, we plot average cumulative returns from listing day until 120 days. For the subsample with high GMP there is an initial sharp correction followed by a gentle downward adjustment in prices. On the other hand for low GMP firms, we find that initial correction is less sharp, but subsequently the price reversion is much more steeper. An implication of our finding is that while high Grey Market Prices are indicative of a preponderance of sentiment traders, they may also indicate the presence of sophisticated investors who stand ready to exploit investor irrationality.

Summing up, we find that after-market returns of Indian IPOs start correcting from the prices indicated by grey market prices. As such this pattern is potentially exploitable by sophisticated investors. Empirical evidence on this is shown in the next section.

5.0 Trading Strategies to Profit from Grey Market Prices

Can a savvy investor exploit the observed pattern in after-market prices relative to the grey market prices? We explore this more fully by utilizing two strategies. Strategy A involves selling at the grey market prices and delivering the shares on the listing day. When an issue is oversubscribed we assume that an investor gets a fractional allotment and buys the rest of the shares short-sold from the market at the closing price on the listing day. The results of this strategy are shown only for retail investors. We also show the results of the profits from this strategy by short-covering on days 2, 5, 10 and 20.

Strategy B involves buying shares at the prices implied by grey market and selling it in the aftermarket on listing day and days 2,5,10 and 20. As such this strategy tries to

examine if there is a momentum effect and whether investor exploit it to make profits. If a momentum effect exists, then it should affect issues that are more highly oversubscribed. Therefore we examine the profitability of this strategy based on the degree of oversubscription.

The results of investment strategies A and B are shown in Table 6. Based on both raw and excess returns strategy A shows positive returns for all horizons and for both low and high GMP subsamples. The median raw returns range from 16.3% to 24.8% for the high GMP subsample and from 9% to 17.8% for low GMP subsample. High GMP stocks on average higher profits from strategy A as compared to low GMP stocks but the differences are only weakly significant for some of the horizons. A similar pattern is observed when we observe excess returns arising from implementing strategy A.

In contrast to strategy A, strategy B does not show positive returns for any horizon. We dichotomize the returns for firms with high and low oversubscription. The returns from following strategy B are predominantly negative and there is no significant difference across the subsamples. Both raw returns and excess returns are preponderantly negative for strategy B.

Summing up, it appears that grey market prices incorporate retail investors' sentiment in Indian IPOs. Interestingly, the effects of this start to get corrected rather quickly starting from the listing day. Sophisticated investors are able to profit from following a strategy of selling at the grey market price and subsequent short-covering on listing.

6.0 Conclusion

There exist a number of research papers that document a significant role for investor sentiment in IPO markets. Recent work based on grey markets in developed countries show that initial high returns for IPOs and their subsequent reversal can be explained by investor sentiment. In the context of emerging markets, IPOs are shown to earn very high returns which are not easily explained by theories involving investor rationality. A plausible explanation is the existence of investor sentiment. We study the grey market for Indian IPOs to examine the role of sentiment investors.

Our principal findings are as follows. First, grey market prices are highly predictable and they are related to the subscription levels of investors. Second, initial listing returns are positively and significantly related to grey market premium. Third, aftermarket returns start correcting sharply from listing day onwards when we use grey market prices as the basis. This gives rise to a profitable trading strategy of selling at grey market prices followed by short-covering upon listing.

We contribute to the literature on IPO underpricing by showing that investor sentiment plays a major role in explaining initial returns by using evidence from the Indian grey market. Also in contrast to the studies done on developed markets we find that subsequent stock price corrections in the aftermarket are not related to grey market premium. Perhaps, the measured grey market premium is a noisy proxy for investor sentiment.

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Table 1 Descriptive Statistics

This table reports the offer, firm and corporate governance characteristics of Indian IPOs in Panel A, B and C, respectively. The IPO sample period is from May 2007 t December 2008. The low and high grey market premiums (GMP) are classified by the median of GMP. If the firm's GMP is equal and lower (higher) than the media GMP, the firm is classified by low (high) GMP. Shares offered is the number of shares issued to the public by the issuers. Net proceeds is the total amount raised by th issuers excluding fees and expenses. Offer price is the issuing price of the IPO shares. Low (High) file price is the lowest (highest) offer price. Offer-to-Open (Offer-to Close) return BSE is the difference between the opening (closing) price and offer price as a percentage of the offer price for IPOs listing on Bombay Stock Exchang Total subscription (oversubscription) is the aggregate of QIB, retail and non-institutions subscriptions (oversubscription times). QIB and retail subscriptio (oversubscription) are the qualified institutional buyers and retail investors subscription (oversubscription times), respectively. UW reputation is the investment bank reputation measured by the market shares of the proceeds and overallotment shares raised by them during 2006 – 2008. The number of underwriters includes lead an co-lead manager in the IPO activity. Age is the number of years from incorporating to listing year for IPO firms. Sales, net income, cash flows from operating, tota assets, total liabilities, EPS, return on net worth and net assets value per share are based on the most recent fiscal year ending prior to the IPO. Number of directors is th total number of directors on the board, number of independent directors is the total number of independent or outside directors. Busy managing director is the number o concurrent directorships held by the managing director. Managing director age is the age of managing director. Board age is the average age of the board of director Managing director (Board) shareholding pre-IPO is the percentage of shares held by managing director (board of directors) prior to IPO. Promote shareholdings pre- an post-IPO are the percentage of shares held by the firm's promoters before and after the IPO, respectively. The financial and corporate governance data are retrieved fro the IPO prospectus. The mean and median comparisons of low and high GMP samples are based on the independent t-test and Wilcoxon Signed Rank test, respectively *** , ** , and * represent significance at the 1%, 5%, and 10% levels for a two-tailed test, respectively.

	All Firms N=75		Low GMP N=41		High GMP N=34		Difference Low GMP – High GMP			
	Mean	Median	Mean	Median	Mean	Median	Mean	t-test	Median	Wilcoxo Signed- Rank tes
Panel A Offer Characteristics										
Shares Offered (million)	24.611	5.912	17.873	6.500	32.736	4.900	-14.863	-0.79	1.600	-1.59
Net Proceeds ($million)	44.142	9.963	14.030	6.111	80.453	17.070	-66.423**	-2.09	-10.959***	-3.47
Offer Price	219.893	150.000	108.585	82.000	354.118	332.500	-245.532***	-6.25	-250.500***	-5.55
Low File Price	200.800	125.000	101.000	80.000	321.147	305.000	-220.147***	-6.15	-225.000***	-5.53
High File Price	225.120	150.000	112.171	85.000	361.324	340.000	-249.153***	-6.21	-255.000***	-5.55
Offer-to-Open Return BSE	0.211	0.099	0.128	0.063	0.312	0.270	-0.184***	-2.95	-0.207**	-2.33
Offer-to-Close Return BSE	0.311	0.150	0.232	0.057	0.408	0.242	-0.176	-1.25	-0.185**	-2.19

Total Subscription (million)	996.548	55.563	285.121	17.164	1,880.442	190.593	-1,595.320	-1.32	-173.430***	-4.61
QIB Subscription (million)	794.797	16.774	206.1611	4.313	1526.132	135.529	-1,319.971	-1.28	-131.216***	-6.05
Retail Subscription (million)	70.075	14.078	43.802	9.416	102.718	20.458	-58.916	-1.19	-11.042**	-2.03
Oversubscription (times)	75.614	19.980	23.426	8.640	140.453	107.953	-117.027***	-4.97	-99.313***	-4.99
QIB Oversubscription (times)	30.396	6.914	7.714	1.740	58.577	52.105	-50.863***	-5.50	-50.365***	-6.10
Retail Oversubscription (times)	13.304	5.398	6.853	3.194	21.318	14.010	-14.465***	-2.90	-10.816***	-3.10
UW Reputation (%)	2.789	0.900	1.672	0.900	4.135	4.280	-2.462***	-3.70	-3.380***	-3.36
Number of Underwriters	2.040	2.000	1.805	2.000	2.324	2.000	-0.519	-1.57	0.000	-1.56
Panel B Firm Characteristics										
Age	15.773	13.000	16.122	12.000	15.353	14.500	0.769***	5.13	-2.500	-1.38
Sales ($million)	4,216.797	1,287.689	3,975.142	968.420	4,501.096	2,450.905	-525.954	-0.24	-1,482.485***	-2.61
Net Income ($million)	631.157	133.165	409.277	67.104	892.193	226.356	-482.916	-1.08	-159.252***	-3.83
Cash Flows from Operating ($million)	542.419	16.088	280.606	20.148	858.134	-31.775	-577.529	-0.32	51.923	-1.46
Total Assets ($million)	25,603.873	1,295.150	33,136.234	845.555	16,520.731	2,774.310	16,615.503	0.63	-1,928.755***	3.43
Total Liabilities ($million)	22,451.813	747.564	30,895.055	420.667	12,270.257	1,175.260	18,624.798	0.77	-754.593***	-2.79
EPS	11.638	9.980	8.550	7.145	15.272	12.890	-6.723***	-2.82	-5.745***	-2.93
Return on Net Worth	27.187	24.700	23.619	20.000	31.279	26.400	-7.659	-1.56	-6.400	-1.35
Net Assets Value Per Share	50.180	29.375	34.083	23.175	69.117	47.950	-35.034**	-2.20	-24.775***	-2.78
Panel C Corporate Governance Characteristics										
Number of Board of Directors	7.613	8.000	7.268	7.000	8.029	8.000	-0.761	-1.62	-1.000*	-1.67
Number of Independent Directors	3.840	4.000	3.683	3.000	4.029	4.000	-0.346	-1.49	-1.000*	-1.80
Busy Managing Director	5.440	3.000	2.732	2.000	8.706	6.500	-5.974***	-4.11	-4.500***	-4.28
Managing Director Age	48.200	47.000	47.683	47.000	48.824	46.500	-1.141	-0.44	0.500	0.28
Board Age	53.054	53.500	52.508	53.500	53.713	53.465	-1.205	-1.02	0.035	0.62
Managing Director Shareholdings Pre-IPO (%)	21.314	16.270	22.379	16.270	20.031	15.690	2.348	0.46	0.580	0.07
Board Shareholdings Pre-IPO (%)	39.486	38.800	39.814	38.650	39.091	41.050	0.722	0.12	-2.400	-0.07
Promoter Shareholdings Pre-IPO (%)	80.154	84.080	82.560	86.810	77.253	77.980	5.307	1.26	8.830	0.97
Promoter Shareholdings Post-IPO (%)	58.458	57.750	55.073	52.880	62.540	62.064	-7.467**	-2.16	-9.184**	-2.01

Table 2 Grey Market Premium Regression Results

The dependent variable is the grey market premium (*GMP*) which is measured by the closing grey market premium. *Over Subscription* is the number of times of over subscriptions of the qualified institutional buyers (QIB), retail bidders and non-institutional bidders. *QIB Over Subscription* is the number of times of over subscription of the qualified institutional buyers, i.e. mutual funds. *Retail Over Subscription* is the number of times of over subscription of the retail bidders including Hindu undivided family, non-resident Indians, etc. *Non-Institutional Over Subscription* is the number of times of over subscription of the non-institutional bidders other than QIB and retail bidders. *Grading* is the actual grade assigned by the grading agencies and ranges from 1 to 5; for non-graded IPOs, we assigned the value of zero. *VC* takes the value of 1 if the IPO is backed by venture capital; zero otherwise. *UW Reputation* is the investment bank's reputation measured by the market share of the proceeds and overallotment shares raised during 2006 – 2008. *Group Affiliation* is a dummy variable which equals 1 if the IPO is group affiliated; zero otherwise. *Analyst Recommend* is the dummy variable which equals 1 if the IPO is recommended for subscription; (avoid) zero otherwise. *Method* is the dummy variable which equals 1 if IPO method is fixed-price; zero otherwise. *Offer Price* is the logarithm of IPO offer price. *Issue Size* is the logarithm of number of shares offered. *RONW* is the return on net worth prior to the IPO as reported in the prospectus. *Chg_Promoter Shares* is the ratio of post-IPO promoter shares and pre-IPO promoter shares. *Total Assets* is prior to the IPO and is collected from prospectus. *Age* is the logarithm of number of years from incorporated year to IPO year. *, **, and *** represent the 10%, 5%, and 1% two-tailed significance level, respectively. The t-statistics in the parentheses are White heteroskedasticity-consistent.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.070	0.065	0.366***	0.235**	0.718
	(0.86)	(1.04)	(3.04)	(2.58)	(0.627)
Over Subscription	0.010***				0.009***
	(5.89)				(8.15)
QIB Over Subscription		0.026***			
		(6.56)			
Retail Over Subscription			0.036***		
			(4.74)		
Non-Institutional Over Subscription				0.019***	
				(4.67)	
Grading					0.182***
					(3.35)
VC					-0.522*
					(-1.78)
Underwriter Reputation					0.028
					(1.02)
Group Affiliation					0.065
					(0.57)
Analyst Recommendation					0.055
					(0.36)
Method					0.282
					(1.51)
Offer Price					0.532***

					(4.69)
Issue Size					-0.108
					(-1.60)
RONW					-1.021***
					(-3.27)
Chg Promoter Shareholdings					-1.209
					(-1.28)
Total Assets					-0.024
					(-0.70)
Age					-0.180
					(-1.06)
Adj. R^2	0.646	0.673	0.285	0.545	0.789
F-statistic	134.18***	151.42***	30.04***	88.45***	21.41***

Table 3 Underpricing Regression Results

The dependent variable is underpricing. We measured the underpricing as the offer-to-close return, [(closing price – offer price) / offer price], on the listing day, 2-day, 5-day, 10-day and 20-day in Model 1, 2, 3, 4 and 5, respectively. *GMP* is the grey market premium measured by the closing grey market premium. *Grading* is the actual grade assigned by the grading agencies and ranges from 1 to 5; for non-graded IPOs we assigned the value of 0. *VC* takes the value of 1 if the IPO is backed by venture capital; zero otherwise. *UW Reputation* is the investment bank's reputation measured by the market share of the proceeds and overallotment shares raised during 2006 – 2008. *Group Affiliation* is a dummy variable which equals 1 if the IPO is group affiliated; zero otherwise. *Analyst Recommend* is the dummy variable which equals 1 if the IPO is recommended for subscription; (avoid) zero otherwise. *Method* is the dummy variable which equals 1 if IPO method is fixed-price; zero otherwise. *Offer Price* is the logarithm of IPO offer price. *Issue Size* is the logarithm of number of shares offered. *RONW* is the return on net worth prior to the IPO as reported in the prospectus. *Chg_Promoter Shares* is the ratio of post-IPO promoter shares and pre-IPO promoter shares. *Total Assets* is prior to the IPO and is collected from prospectus. *Age* is the logarithm of number of years from incorporated year to IPO year. *, **, and *** represent the 10%, 5%, and 1% two-tailed significance level, respectively. The t-statistics in the parentheses are White heteroskedasticity-consistent.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	4.060***	4.222***	3.765**	3.437*	2.211
	(2.99)	(2.69)	(2.27)	(1.85)	(1.35)
GMP	0.272***	0.260***	0.240***	0.232***	0.244***
	(4.82)	(3.98)	(3.41)	(2.74)	(3.07)
Grading	-0.117***	-0.131***	-0.138***	-0.143***	-0.175***
	(-3.33)	(-3.28)	(-3.32)	(-3.06)	(-3.81)
VC	-0.026	0.093	0.034	0.113	0.160
	(-0.11)	(0.32)	(0.12)	(0.34)	(0.51)
Underwriter Reputation	0.038	0.054*	0.046	0.040	0.030
	(1.50)	(1.88)	(1.57)	(1.22)	(0.98)
Group Affiliation	-0.044	0.029	0.040	-0.047	0.031
	(-0.37)	(0.19)	(0.29)	(-0.33)	(0.21)
Analyst Recommendation	0.241*	0.204	0.212	0.372**	0.333**
	(1.81)	(1.42)	(1.52)	(2.27)	(2.18)
Method	0.088	-0.253	-0.444	-0.497	-0.514*
	(0.27)	(-0.67)	(-1.43)	(-1.52)	(-1.93)
Offer Price	-0.485***	-0.350**	-0.324**	-0.370**	-0.397**
	(-3.70)	(-2.43)	(-2.06)	(-2.09)	(-2.59)
Issue Size	-0.148*	-0.148	-0.123	-0.080	-0.041
	(-1.87)	(-1.48)	(-1.29)	(-0.76)	(-0.39)
RONW	0.170	0.509	0.341	0.218	0.193
	(0.47)	(1.13)	(0.85)	(0.52)	(0.45)
Chg Promoter Shareholdings	0.371	-1.603	-1.219	-1.037	-0.122
	(0.34)	(-1.22)	(-1.10)	(-0.92)	(-0.12)
Total Assets	0.017	0.053**	0.047**	0.042	0.040
	(0.80)	(2.22)	(2.03)	(1.58)	(1.42)

Age	0.108 (0.92)	0.173 (1.30)	0.088 (0.68)	-0.005 (-0.03)	0.032 (0.23)
Adj. R^2	0.289	0.186	0.171	0.144	0.227
F-statistic	3.25***	2.26**	2.14**	1.93**	2.63***

Table 4A Time-Series Regression Results of Underpricing

The dependent variable is underpricing. We measure the underpricing as the offer-to-close return, [(closing price – offer price) / offer price], during 20-day, 30-day, 60-day, 90-day and 120-day windows relative to the IPO date, respectively, in Model 1, 2, 3, 4 and 5. *Time* is the time trend measured during the estimation windows. *GMP* is the grey market premium measured by the closing grey market premium. *Grading* is the actual grade assigned by the grading agencies and ranges from 1 to 5; for non-graded IPOs we assigned the value of 0. *VC* takes the value of 1 if the IPO is backed by venture capital; zero otherwise. *UW Reputation* is the investment bank's reputation measured by the market share of the proceeds and overallotment shares raised during 2006 – 2008. *Group Affiliation* is a dummy variable which equals 1 if the IPO is group affiliated; zero otherwise. *Analyst Recommend* is the dummy variable which equals 1 if the IPO is recommended for subscription; (avoid) zero otherwise. *Method* is the dummy variable which equals 1 if IPO method is fixed-price; zero otherwise. *Offer Price* is the logarithm of IPO offer price. *Issue Size* is the logarithm of number of shares offered. *RONW* is the return on net worth prior to the IPO as reported in the prospectus. *Chg_Promoter Shares* is the ratio of post-IPO promoter shares and pre-IPO promoter shares. *Total Assets* is prior to the IPO and is collected from prospectus. *Age* is the logarithm of number of years from incorporated year to IPO year. *, **, and *** represent the 10%, 5%, and 1% two-tailed significance level, respectively. The t-statistics in the parentheses are White heteroskedasticity-consistent.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Intercept	0.256***	3.404***	0.249***	2.953***	0.238***	2.244***	0.238***	1.744***	0.209***	1.588***
	(7.46)	(8.69)	(8.76)	(9.18)	(11.82)	(10.08)	(14.35)	(10.12)	(13.62)	(10.68)
Time	-0.005*	-0.005**	-0.004**	-0.004***	-0.003***	-0.004***	-0.003***	-0.003***	-0.002***	-0.002***
	(-1.69)	(-2.13)	(-2.40)	(-3.12)	(-5.53)	(-7.31)	(-10.49)	(-12.34)	(-9.93)	(-11.25)
GMP		0.236***		0.237***		0.210***		0.184***		0.197***
		(14.66)		(15.88)		(17.76)		(19.88)		(18.89)
Grading		-0.147***		-0.160***		-0.174***		-0.176***		-0.193***
		(-14.90)		(-18.62)		(-27.13)		(-34.28)		(-37.86)
VC		0.056		0.102*		0.140***		0.187***		0.304***
		(0.84)		(1.73)		(3.05)		(5.14)		(8.10)
Underwriter Reputation		0.044***		0.040***		0.032***		0.029***		0.020***
		(6.40)		(6.86)		(7.56)		(8.44)		(6.38)
Group Affiliation		0.008		0.015		0.023		0.047***		0.039**
		(0.23)		(0.52)		(1.10)		(2.63)		(2.42)
Analyst Recommendation		0.303***		0.324***		0.371***		0.350***		0.363***
		(8.88)		(11.15)		(17.76)		(20.84)		(23.79)

Method		-0.456***		-0.476***		-0.409***		-0.288***		-0.271***
		(-6.59)		(-8.56)		(-10.25)		(-8.58)		(-8.28)
Offer Price		-0.357***		-0.377***		-0.365***		-0.320***		-0.313***
		(-9.85)		(-12.62)		(-17.12)		(-19.09)		(-19.60)
Issue Size		-0.097***		-0.079***		-0.063***		-0.060***		-0.050***
		(-4.19)		(-4.00)		(-4.46)		(-5.46)		(-5.32)
RONW		0.270***		0.219***		0.164***		0.229***		0.331***
		(2.87)		(2.72)		(2.94)		(5.48)		(9.30)
Chg Promoter Shareholdings		-0.856***		-0.452**		0.121		0.294**		0.177*
		(-3.42)		(-2.16)		(0.81)		(2.53)		(1.73)
Total Assets		0.042***		0.040***		0.037***		0.038***		0.042***
		(7.27)		(7.71)		(10.62)		(14.30)		(17.12)
Age		0.055*		0.062**		0.074***		0.104***		0.094***
		(1.79)		(2.37)		(3.91)		(6.92)		(6.39)
Adj. R^2	0.001	0.304	0.002	0.310	0.006	0.306	0.015	0.295	0.012	0.284
F-statistic	2.80*	46.44***	5.87**	71.21***	28.46***	138.84***	101.07***	197.04***	112.94***	249.07***

Table 4B Time-Series Regression Results of Market Return Post-IPO

The dependent variable is market return post-IPO. We measure the market return as [(closing price – previous day closing price) / previous day closing price], during 20-day, 30-day, 60-day, 90-day and 120-day windows post-IPO, respectively, in Model 1, 2, 3, 4 and 5. *Time* is the time trend measured during the estimation windows. *GMP* is the grey market premium measured by the closing grey market premium. *Grading* is the actual grade assigned by the grading agencies and ranges from 1 to 5; for non-graded IPOs we assigned the value of 0. *VC* takes the value of 1 if the IPO is backed by venture capital; zero otherwise. *UW Reputation* is the investment bank's reputation measured by the market share of the proceeds and overallotment shares raised during 2006 – 2008. *Group Affiliation* is a dummy variable which equals 1 if the IPO is group affiliated; zero otherwise. *Analyst Recommend* is the dummy variable which equals 1 if the IPO is recommended for subscription; (avoid) zero otherwise. *Method* is the dummy variable which equals 1 if IPO method is fixed-price; zero otherwise. *Offer Price* is the logarithm of IPO offer price. *Issue Size* is the logarithm of number of shares offered. *RONW* is the return on net worth prior to the IPO as reported in the prospectus. *Chg_Promoter Shares* is the ratio of post-IPO promoter shares and pre-IPO promoter shares. *Total Assets* is prior to the IPO and is collected from prospectus. *Age* is the logarithm of number of years from incorporated year to IPO year. *, **, and *** represent the 10%, 5%, and 1% two-tailed significance level, respectively. The t-statistics in the parentheses are White heteroskedasticity-consistent.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Intercept	4.568***	19.529*	2.885***	12.335*	1.292**	4.454	0.758**	2.355	0.455*	1.678
	(3.01)	(1.88)	(2.81)	(1.73)	(2.44)	(1.19)	(2.11)	(0.90)	(1.65)	(0.80)
Time	-0.354***	-0.354***	-0.156***	-0.154***	-0.039***	-0.038***	-0.017***	-0.017***	-0.009**	-0.008**
	(-3.25)	(-3.22)	(-3.11)	(-3.04)	(-2.97)	(-2.86)	(-2.91)	(-2.71)	(-2.46)	(-2.31)
GMP		1.287**		0.783**		0.322*		0.258*		0.177*
		(2.38)		(2.07)		(1.64)		(1.90)		(1.70)
Grading		-0.833***		-0.593***		-0.329***		-0.258***		-0.201***
		(-2.96)		(-3.06)		(-3.22)		(-3.61)		(-3.55)
VC		0.446		0.305		0.271		0.375		0.338
		(0.24)		(0.24)		(0.41)		(0.83)		(0.96)
Underwriter Reputation		0.230		0.178		0.069		0.060		0.032
		(1.26)		(1.43)		(1.03)		(1.27)		(0.84)
Group Affiliation		0.106		0.080		0.109		0.103		0.061
		(0.12)		(0.13)		(0.33)		(0.44)		(0.33)
Analyst Recommendation		1.710**		1.372**		0.637**		0.429*		0.369**
		(2.10)		(2.43)		(2.07)		(1.92)		(2.04)

Method		-1.365		-0.756		0.021		0.309		0.016
		(-0.59)		(-0.48)		(0.03)		(0.55)		(0.04)
Offer Price		-2.058**		-1.461**		-0.550*		-0.314		-0.231
		(-2.30)		(-2.39)		(-1.71)		(-1.40)		(-1.33)
Issue Size		-0.484		-0.360		-0.166		-0.145		-0.069
		(-0.76)		(-0.82)		(-0.72)		(-0.91)		(-0.55)
RONW		1.872		1.399		0.701		1.181**		0.700
		(0.85)		(0.93)		(0.86)		(2.06)		(1.55)
Chg Promoter Shareholdings		-3.257		-0.705		0.398		-0.343		-0.482
		(-0.48)		(-0.15)		(0.16)		(-0.21)		(-0.37)
Total Assets		0.259*		0.155		0.081		0.089**		0.057*
		(1.83)		(1.58)		(1.50)		(2.35)		(1.84)
Age		0.500		0.520		0.236		0.400*		0.177
		(0.54)		(0.83)		(0.72)		(1.74)		(0.98)
Adj. R^2	0.016	0.024	0.010	0.015	0.005	0.006	0.003	0.005	0.001	0.002
F-statistic	25.79***	3.51***	23.90***	3.34***	21.37***	2.81***	19.78***	3.16***	13.67***	2.52***

Table 5 Listing Day Trading Volume Regression Results

The dependent variables are the logarithm of listing day trading volume and the ratio of trading volume to shares outstanding post-IPO which are presented in Panel A and B, respectively. *GMP* is the grey market premium measured by the closing grey market premium. *Grading* is the actual grade assigned by the grading agencies and ranges from 1 to 5; for non-graded IPOs we assigned the value of 0. *VC* takes the value of 1 if the IPO is backed by venture capital; zero otherwise. *UW Reputation* is the investment bank's reputation measured by the market share of the proceeds and overallotment shares raised during 2006 – 2008. *Group Affiliation* is a dummy variable which equals 1 if the IPO is group affiliated; zero otherwise. *Analyst Recommend* is the dummy variable which equals 1 if the IPO is recommended for subscription; (avoid) zero otherwise. *Method* is the dummy variable which equals 1 if IPO method is fixed-price; zero otherwise. *Offer Price* is the logarithm of IPO offer price. *Issue Size* is the logarithm of number of shares offered. *RONW* is the return on net worth prior to the IPO as reported in the prospectus. *Chg_Promoter Shares* is the ratio of post-IPO promoter shares and pre-IPO promoter shares. *Total Assets* is prior to the IPO and is collected from prospectus. *Age* is the logarithm of number of years from incorporated year to IPO year. *, **, and *** represent the 10%, 5%, and 1% two-tailed significance level, respectively. The t-statistics in the parentheses are White heteroskedasticity-consistent.

	Panel A: Logarithm of Trading Volume			Panel B: Trading Volume / Shares Outstanding		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	16.619***	16.596***	11.075***	1.108***	1.244***	13.620**
	(138.11)	(95.27)	(5.76)	(3.82)	(2.98)	(2.59)
GMP	-0.214***	-0.219***	-0.059	-0.247**	-0.217**	0.106
	(-3.09)	(-3.52)	(-1.04)	(-2.41)	(-2.53)	(1.08)
Grading		0.017	0.038		-0.102	0.054**
		(0.25)	(0.88)		(-0.83)	(0.69)
VC			0.176			-0.926
			(0.71)			(-1.29)
Underwriter Reputation			-0.039			0.048
			(-1.10)			(0.80)
Group Affiliation			-0.059			-0.392
			(-0.40)			(-1.28)
Analyst Recommendation			-0.070			0.184
			(-0.44)			(0.54)
Method			-0.143			0.409
			(-0.37)			(0.42)
Offer Price			-0.278			-1.300*
			(-1.28)			(-1.74)
Issue Size			0.548***			-0.402**
			(5.91)			(-2.00)
RONW			-0.465			-0.666
			(-1.44)			(-0.87)
Chg Promoter Shareholdings			-0.382			3.611
			(-0.28)			(0.82)
Total Assets			-0.049			-0.110*
			(-1.46)			(-1.68)
Age			-0.385***			-0.579
			(-2.68)			(-1.64)

Adj. R^2	0.085	0.073	0.416	0.019	0.012	0.210
F-statistic	7.88***	3.92**	4.96***	2.43	1.45	2.47***

Table 6 Investment Strategies of Retail Bidders

This table presents the two investment strategies of retail bidders. Panel A strategy is selling at grey market premium (GMP) on day before listing. Deliver on listing day to cover the position. Return is measured as (Selling Price - Buying Price)/Buying Price. Selling price = GMP + offer price; Buying Price = (1/Retail over subscription) * (Offer Price) + {1-(1/Retail over subscription)} * (closing price on listing day). Panel B strategy is buying at GMP plus offer price from grey market, and sell at listing day closing price, i.e. days 2, 5,10,20 etc. Excess return is the abnormal return relative to the market return measured by the Sensex index market return. The mean and median comparisons of low and high GMP samples in panel A and that of low and high oversubscription samples are based on the independent t-test and Wilcoxon Signed Rank test, respectively. ***, **, and * represent significance at the 1%, 5%, and 10% levels for a two-tailed test, respectively.

Panel A: Strategy A

	Low GMP (41)		High GMP (34)		Difference				Low GMP (41)		High GMP (34)		Difference			
	Mean	Median	Mean	Median	Mean	t-test	Median	Wilcoxon Signed-Rank test	Mean	Median	Mean	Median	Mean	t-test	Median	Wilcoxon Signed-Rank test
	Raw Return								Excess Return							
Listing Day	0.090	0.092	0.405	0.163	-0.315*	-1.75	-0.071*	-1.64	0.104	0.100	0.407	0.159	-0.303*	-1.67	-0.060	-1.42
Day 2	0.100	0.113	0.392	0.155	-0.292	-1.61	-0.042	-1.30	0.101	0.107	0.393	0.159	-0.293	-1.61	-0.052	-1.27
Day 5	0.159	0.124	0.405	0.187	-0.246	-1.44	-0.064	-0.96	0.155	0.120	0.407	0.205	-0.251	-1.48	-0.084	-0.92
Day 10	0.181	0.177	0.444	0.231	-0.263*	-1.64	-0.053	-1.14	0.176	0.192	0.447	0.237	-0.271*	-1.70	-0.045	-1.28
Day 20	0.094	0.178	0.478	0.248	-0.384*	-1.79	-0.070	-1.45	0.097	0.171	0.478	0.235	-0.380*	-1.77	-0.065	-1.41

Panel B: Strategy B

	Low Oversubscription (38)		High Oversubscription (37)		Difference				Low Oversubscription (38)		High Oversubscription (37)		Difference			
	Mean	Median	Mean	Median	Mean	t-test	Median	Wilcoxon Signed-Rank test	Mean	Median	Mean	Median	Mean	t-test	Median	Wilcoxon Signed-Rank test
	Raw Return								Excess Return							
Listing Day	-0.083	-0.172	-0.069	-0.092	-0.014	-0.16	-0.080	-0.02	-0.074	-0.156	-0.064	-0.068	-0.010	-0.11	-0.088	-0.08
Day 2	-0.065	-0.123	-0.048	-0.100	-0.017	-0.17	-0.024	-0.19	-0.066	-0.120	-0.046	-0.077	-0.020	-0.19	-0.043	-0.31
Day 5	-0.089	-0.146	-0.083	-0.157	-0.006	-0.06	0.011	0.01	-0.091	-0.156	-0.084	-0.115	-0.007	-0.07	-0.041	-0.10

Day 10	-0.128	-0.208	-0.084	-0.177	-0.045	-0.43	-0.031	-0.09	-0.131	-0.202	-0.083	-0.156	-0.048	-0.46	-0.046	-0.11
Day 20	-0.168	-0.253	-0.133	-0.187	-0.035	-0.36	-0.067	-0.66	-0.166	-0.258	-0.132	-0.206	-0.034	-0.35	-0.053	-0.68

Figure 1. Mean Grey Market Premium and Underpricing of IPOs

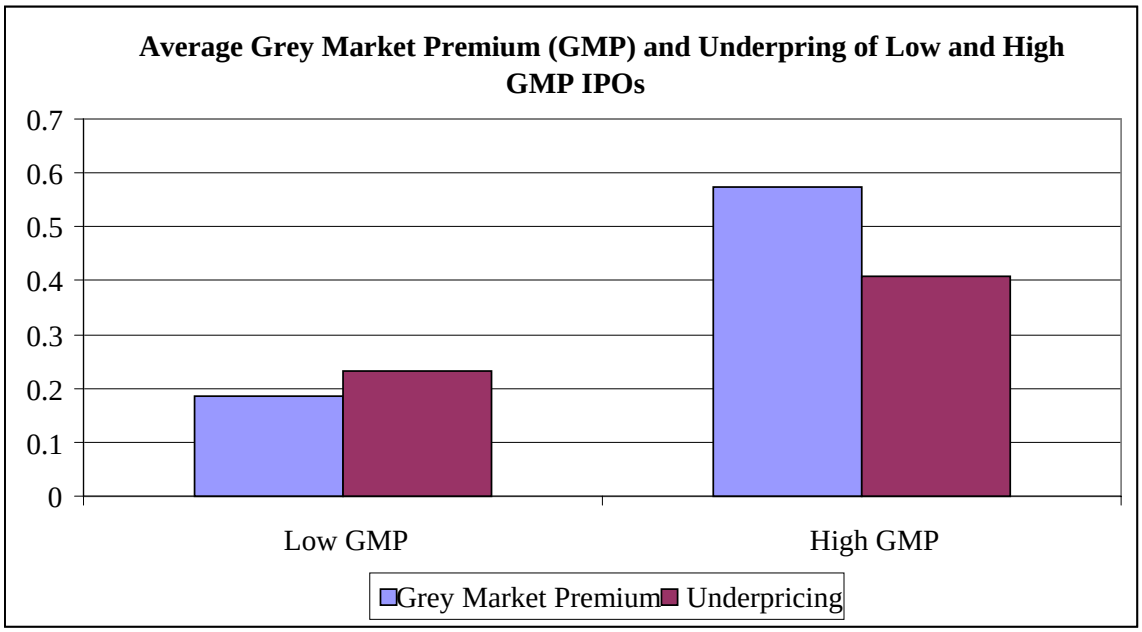

Figure 2. Median Grey Market Premium and Underpricing of IPOs

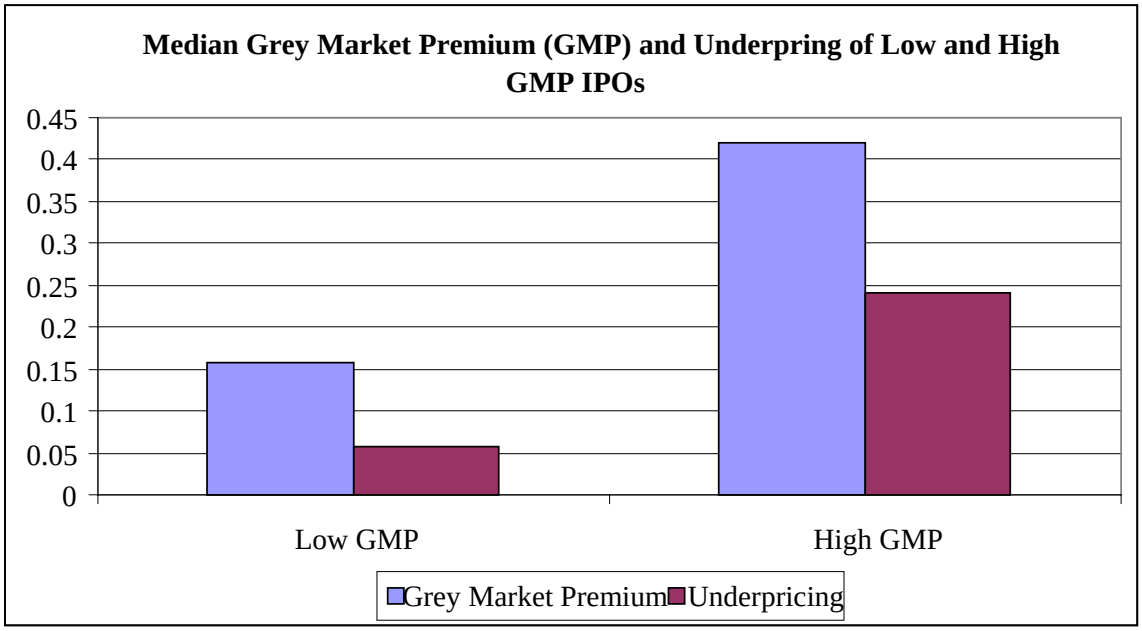

Figure 3. Mean Returns of Low and High GMP IPOs
Return is computed based on $[P_t - (OP + GMP)]/(OP + GMP)$. Where P_t is the closing price on the listing day, days 2, 5, 10, and 20.

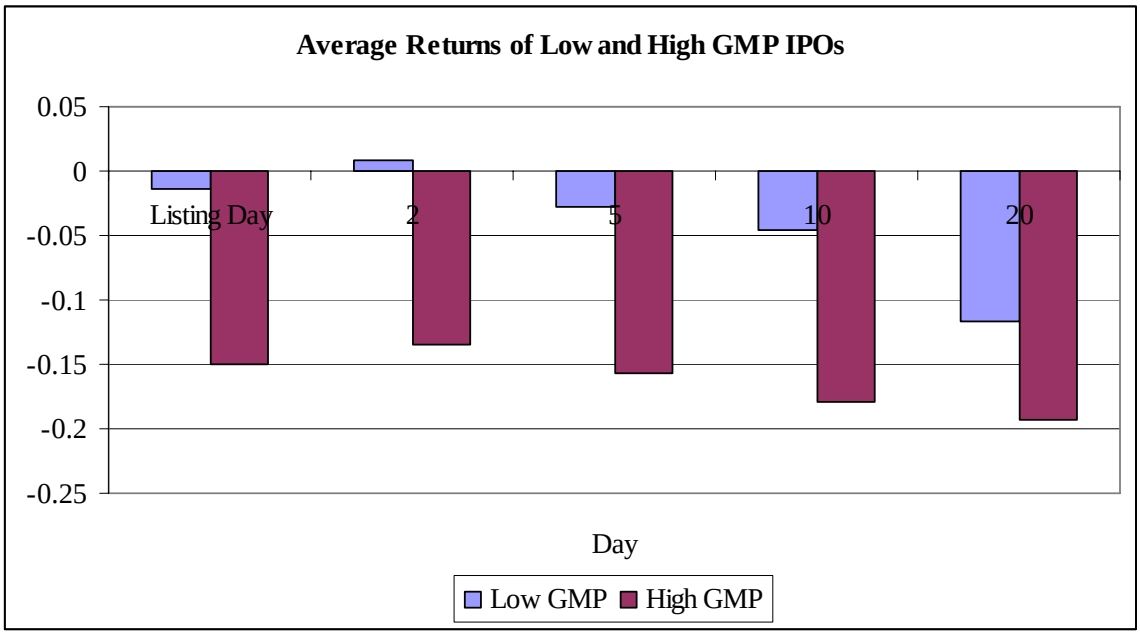

Figure 4. Median Returns of Low and High GMP IPOs

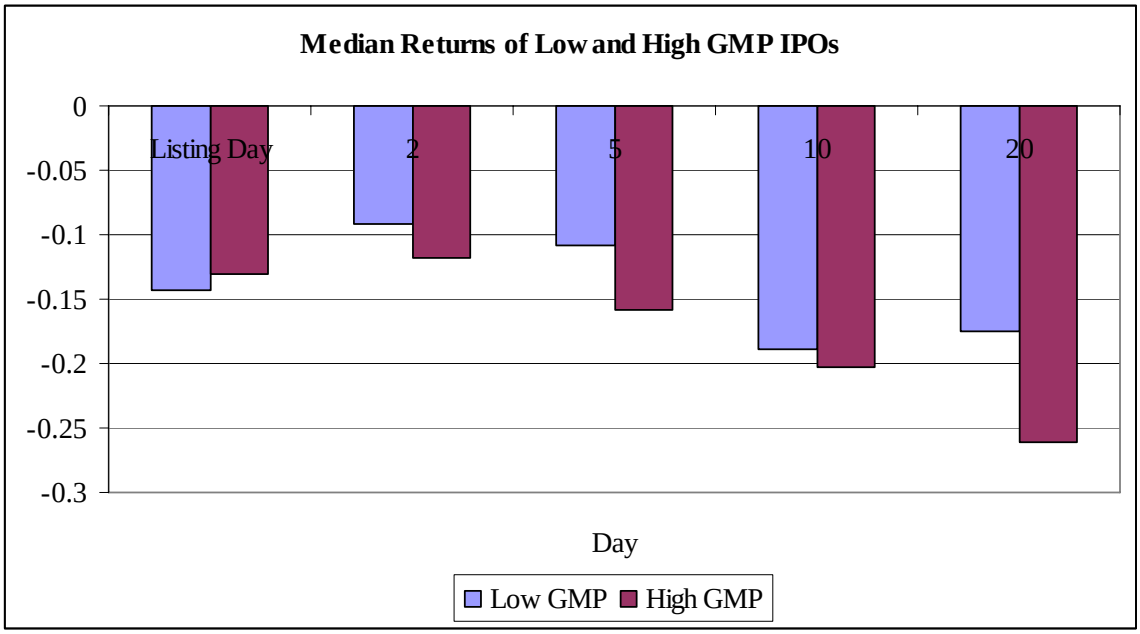

Figure 5. Mean Cumulative Market Returns of Low and High GMP IPOs